

REMARKS

By the foregoing, specification paragraphs [0062], [0066], [0071], [0083] and [0087] are amended for consistency and to correct minor errors. Specification paragraphs [0012] and [0014] of the Summary of the Invention section are amended to conform to the language of amended independent Claims 2 and 11.

Claim 1 has been cancelled, and claim 2 rewritten in independent form including the limitations of now-cancelled claim 1 and additionally including the words "one-dimensional" and "averaging across the width of the tapered beard as imaged." The same words have been added to claims 10 and 11.

The dependency of claims 3, 6 and 7 has been changed in view of the cancellation of claim 1. Claim 16 has been amended to delete a duplicate occurrence of the word "system." An antecedent basis problem is corrected in Claim 10, by changing "optical imaging device" to "scanner."

New dependent Claims 17, 18 and 19 are added, as Group I claims

Favorable reconsideration of the application in its presently-amended form is requested for reasons discussed hereinbelow.

Restriction Requirement

The Examiner has required restriction as between Group I, Claims 1-11, "drawn to apparatus and method of fiber length measurements, classified in class 356, subclass 429;" and Group II, Claims 12-16, "drawn to a method for calibration of length measurement systems, classified in class 250, subclass 252.1."

At the outset, it is noted with appreciation that the Examiner considers the inventions of Groups I and II to be patentably distinct. It is assumed that a consistent standard of patentability will be applied when examining the claims in view of the prior art.

As support for the restriction requirement, the Examiner asserts: "In this case the process as claimed can be practiced by another and materially different apparatus such as a fiber strength testing apparatus." The Examiner's stated basis is not explained and is not understood. How can the method of claim 12, which is directed to "a method for calibration of length measurement systems providing probability density functions," be practiced by a fiber strength testing apparatus?

Accordingly, it is requested that Claims 12-16 also be examined, and allowed. The Restriction Requirement is unsupported, and should be withdrawn.

The provisional election (with traverse) of Group I, Claims 1-11, is affirmed. New Claims 17-19 are included in Group I.

35 USC § 101

Claim 11 stands rejected under 35 USC § 101 on the asserted basis that the claim is directed to non-statutory subject matter. The Examiner asserts: "With regards to Claim 11, merely identifying; determining; devising; evaluation; analyzing; etc. ... is not sufficient to constitute a tangible result since the outcome of the method steps has not been used in a disclosed practical application nor made available in such a manner that its usefulness in a disclosed practical application is realized." Reconsideration is requested.

In response, it is submitted that producing a measurement is a practical and tangible result. Thus, the final words of Claim 11 are "to produce a fiber length distribution," which notably is not among the list of "merely" items facilely enumerated by the Examiner.

Specification paragraph [0004] reads: "The terminologies complete fiber length distribution [the terminology of the tangible result recited in Claim 11], fiber length histogram, and fiber length probability density function (PDF) are interchangeably used herein and in the literature on fiber length measurements." Specification paragraph [0005] goes on to

refer to the importance of cotton fiber length measurements in determining commercial market values of cotton. Further, specification paragraph [0010] refers to "data products."

Thus, "fiber length distribution" is an important measurement or data product which clearly is useful and of practical commercial significance.

The rejection of Claim 11 under 35 USC § 101 should be withdrawn.

Prior Art Rejections

Claims 1-11 stand rejected under 35 USC § 103 as unpatentable over Ghorashi et al Pat. No. 5,907,394, in view of Shofner et al Pat. No. 5,394,480. Reconsideration is requested in view of the foregoing amendments and the discussion hereinbelow.

A relevant portion of the Ghorashi et al disclosure is identified by the Examiner as column 16, line 6 through column 17, line 31. Light transmission measurements in particular are described beginning in column 6, around line 46. What is disclosed there is an apparatus for determining Hertel's "amount" (A) as referred to in paragraph [0002] of the subject specification, differing little from Hertel's 1942 disclosure (Hertel Pat. No. 2,299,983). Such prior art measurements are further elaborated on in paragraphs [0009] and [0010] of the subject specification.

As recognized by the Examiner, Ghorashi et al "fails to show an optical imaging device viewing the tapered beard through said transparent window for acquiring a two dimensional image of the tapered beard."

Thus, the Examiner also relies upon Shofner et al Pat. No. 5,394,480 ("Topological Map Maker") on the asserted basis that "Shofner shows that is known to provide an optical imaging device viewing the tapered beard through said transparent window for acquiring a two dimensional image of the tapered beard (col. 2, lines 59-64, col. 3, line 13-col. 4, line 14) for a carding machine."

The Examiner's reliance upon the '480 Shofner et al patent is not understood. The '480 Shofner et al patent does not disclose tapered beards, single fibers, nor length measurements. What is disclosed are image-based measurements of undesirable entities in the cotton samples, such as trash particles and neps. Much of the Shofner et al disclosure is directed to a mechanical scanning involving "stepping motors and translation tables [which] drive the mesh filter in X, Y directions relative to the nozzle, the suction tube and the two cameras." (Column 3, lines 57-60)

The Examiner concludes with the assertion: "It would have been obvious to someone of ordinary skill in the art to combine the device of Ghorashi with the two-dimensional imaging of Shofner for the purposes of providing a control system for sensing the physical properties of cotton as it progresses through a gin (Ghorashi, abstract)."

Despite the lack of particular relevance of Shofner et al Patent No. 5,394,480, applicant concedes that cameras and other image-producing devices are well known. However, what is neither disclosed nor suggested by the prior art is applicant's determination of fiber "amount" (A) as a function of distance x from the fiber sampler by averaging across the width of the tapered beard, as described in detail in applicant's specification beginning with paragraph [0051]. Specification paragraphs [0052], [0054] and [0055] are particularly relevant.

Accordingly, independent Claims 2 and 11 are amended to particularly recite that fiber amount is determined as a function of one-dimensional distance along the length of a tapered beard by averaging across the width of the tapered beard as imaged.

In brief conclusion, tapered beards, optical channels and extension mode amount $A(x)$ determinations are well known, beginning with Hertel in the 1940s. The subject image-based determinations of $A(x)$, referred to in applicant's disclosure as L_i , are entirely new.

Claims 1, 3, 5 and Claims 2 & 10

In numbered section 6 of the Office Action, the Examiner separately asserts reasons for rejecting Claims 1, 3 and 5 and Claims 2 and 10. Dependent Claim 1 has been cancelled and the recitations thereof incorporated into Claim 2, which is further amended. Accordingly, Claims 2, 3, 5 and 10 are now briefly addressed together.

For reasons discussed above, Claim 2 as amended distinguishes patentably over Ghorashi et al Patent No. 5,907,394 in view of Shofner et al Patent No. 5,394,480. There is no motivation to combine Shofner et al '480 with Ghorashi et al '394; Shofner et al does not disclose tapered beards, nor single fibers, nor length measurements. Moreover, even if these two references are combined, applicant's claimed invention involving image-based determinations of A(x) by averaging across the width of the tapered beard does not result. Accordingly, claim 2 is allowable.

Claim 3 specifically recites that said optical imaging device "comprises a scanner intended for scanning documents," which the Examiner has not addressed. In that regard, applicant draws attention to International Publication No. WO 01/20321, published 22 March 2001, which discloses the use of a scanner intended for scanning documents for the purpose of imaging a sample of cotton. That disclosure, however, does not involve tapered beards. (A later-issued U.S. patent with a disclosure corresponding in part to that of WO 01/20321 is Shofner et al Pat. No. 6,735,327, issued May 11, 2004. The abstract of Pat. No. 6,735,327 was erroneously printed.)

Accordingly, Claims 3 and 5 are allowable on the basis of their own recitations, as well as for dependency from allowable Claim 2. (Claim 5 depends from Claim 3.)

Dependent Claim 10 has been amended to recite "determining fiber amount as a function of one-dimensional distance x from the fiber sampler by averaging across the width of the tapered beard as imaged." Accordingly, Claim 10 is allowable for the same reasons as discussed hereinabove.

Claims 6, 7 and 8

Claims 6, 7 and 8 are allowable at least for their dependency, either directly or indirectly, from allowable claim 2.

Claim 11

Method Claim 11 has been correspondingly amended, and is allowable for the same reasons as apparatus claim 2.

Moreover, claim 11 recites the further step of "analyzing the determined fiber amount as a function of distance to produce a fiber length distribution." This further aspect of applicant's invention is discussed beginning in specification paragraph [0058]. There is no such disclosure in the prior art of record, nor has the Examiner made any attempt to address this aspect of applicant's claimed invention.

Claim 11 should be allowed.

Claims 4 and 9

The Examiner has not stated any basis for rejecting Claims 4 and 9 which, accordingly, should be allowed.

Claims 17, 18 and 19

Claims 17, 18, and 19 are new dependent claims, dependent from Claims 2, 10 and 11, respectively, and are directed to the spectrally-resolved aspect of applicant's invention. Support is provided, for example, in specification paragraph [0052]. There is no such suggestion in the prior art.

Accordingly, new Claims 17, 18 and 19 are each allowable for their own recitations, as well as on the basis they depend from allowable claims.

In view of their dependency, these claims are each properly included in Group I.

Supplemental Information Disclosure Statement

A Supplemental Information Disclosure Statement accompanies this response to formally make of record WO 01/20321 and US 6,735,327, discussed hereinabove.

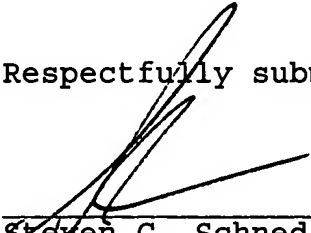
Conclusion

In view of the foregoing, reconsideration and allowance are requested. It is also requested that the restriction requirement as to non-elected Group II, Claims 12-16 be withdrawn.

In the event a telephone interview would expedite the prosecution of this application, the Examiner is requested to telephone the undersigned.

Claims 2-19 are in the case. Claims 2-11 and 17-19 are Group I claims.

Respectfully submitted,

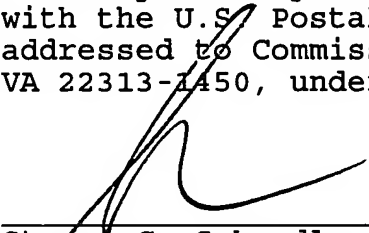


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I hereby certify that this paper is being deposited this date with the U.S. Postal Service as First Class Mail in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, under the provisions of 37 CFR 1.8.



Steven C. Schnedler



Date